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November 27, 2013

Also Sent Via E-mail

Mr. Robert J. Wyatt
NW Natural
220 N.W. Second Avenue
Portland, OR 97209

Re: Remedial Investigation Data Summary Report and Field Sampling Plans
Historical Manufactured Gas Plant Activities
Siltronic Corporation Property
Portland, Oregon
ECSI Nos. 84 and 183

Dear Mr. Wyatt:

The Oregon Department of Environmental Quality (DEQ) reviewed the following documents:

- "Remedial Investigation Data Summary Report, Historical Manufactured Gas Plant Activities - Siltronic Corporation Property, 7200 NW Front Avenue Portland, Oregon" dated March 31, 2011 (RI Data Summary Report);
- "Supplemental Remedial Investigation Field Sampling Activities, Doane Creek Embankment Soil and Sediment - Siltronic Corporation Property, 7200 NW Front Avenue, Portland, Oregon" dated March 29, 2012 (Doane Creek FSP);
- "Supplemental Remedial Investigation Field Sampling Activities, DNAPL Characterization - Siltronic Corporation Property, 7200 NW Front Avenue, Portland, Oregon" dated April 12, 2012 (DNAPL FSP);
- "Supplemental Remedial Investigation Field Sampling Activities, Groundwater Monitoring Well Installation - Siltronic Corporation Property, 7200 NW Front Avenue, Portland, Oregon" dated July 23, 2012 (Groundwater Monitoring FSP).

Hahn and Associates, Inc. prepared the documents listed above on behalf of NW Natural.

DEQ's comments on the RI Data Summary Report and the three FSP's are provided in Attachment 1 and Attachment 2 respectively. The primary purpose of this letter is to inform NW Natural that DEQ:

- Approves the DNAPL FSP and Groundwater Monitoring FSP for implementation subject to the attached comments; and
- Does not approve the Doane Creek FSP without modifying the scope of work and revising the document consistent with our comments.

DEQ requests that within 45-days of receiving this letter, NW Natural revise and resubmit the Doane Creek FSP consistent with our comments in Attachment 2, and in a separate letter provide the information requested in Attachment 1 and Attachment 2.

Please don't hesitate to contact me if you have questions.

Sincerely,

Dana Bayuk
Project Manager
Northwest Region Cleanup Section

Attachments: RI Data Summary Report comments
Doane Creek FSP, Groundwater Montoring FSP, and DNAPL FSP Comments

Cc: Patty Dost, Pearl Legal Group
Myron Burr, Siltronic
Koreen Leil, Siltronic
Alan Gladstone, Davis Rothwell Earle and Xochihua
Rob Ede, Hahn & Associates
James Peale, Maul Foster Alongi
Kerry Gallagher, Maul Foster Alongi
John Edwards, Anchor
Taku Fuji, Anchor QEA, LLC
Ben Hung, Anchor QEA, LLC
John Renda, Anchor QEA, LLC
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Sean Sheldrake, EPA
Lance Peterson, CDM
Dawn Sanders, City of Portland/BES
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Keith Johnson, NWR/Cleanup Section
Tom Gainer, NWR/Cleanup Section
Henning Larsen, NWR/Cleanup & Tanks Section
Cindy Bartlett, Geosyntec Consultants
ECSI No. 84 File
ECSI No. 183 File

ATTACHMENT 1

DEQ Comments
Remedial Investigation Data Summary Report
Historical Manufactured Gas Plant Activities
Siltronic Corporation Property
7200 NW Front Avenue
Portland, Oregon

(Comments submitted November 27, 2013)

DEQ's comments on the "Remedial Investigation Data Summary Report, Historical Manufactured Gas Plant Activities - Siltronic Corporation Property, 7200 NW Front Avenue Portland, Oregon" dated March 31, 2011 (RI Data Summary Report) are provided in Attachment 1.

The RI Data Summary Report documents the work completed by NW Natural to further assess the nature and extent of manufactured gas plant (MGP) residuals and contamination on the Siltronic Corporation property. In addition, the report provides data for assessing potentially complete human health and ecological exposure pathways in the uplands of the Siltronic property and to offsite areas, including the Willamette River and Doane Creek. This information will be used to support the human health and ecological risk assessments that will be prepared subsequent to completion of the RI.

The RI Data Summary Report was prepared by Hahn and Associates, Inc. for NW Natural. DEQ approved the final work plan[1] for the RI site investigations documented in the report in a letter dated October 29, 2007.

Most of DEQ's comments provided in Attachment 1 are for NW Natural to incorporate into the Draft RI Report that will be prepared after the data collection needs of the RI are met. In addition, certain DEQ comments request NW Natural to provide information regarding specific work items discussed in the RI Data Summary Report. NW Natural should note that the RI Data Summary Report comments provided in Attachment 1 are not comprehensive as DEQ focused our review on the portions of the document most relevant to the FSPs.

General Comments

Siltronic Corporation Central Facilities Building (CFB) Supplemental RI. Subsequent to completion of the RI Data Summary Report, Siltronic initiated an investigation in the vicinity of the Central Facilities Building. The investigation supplements the RI work previously completed by Siltronic to characterize the nature and extent of chlorinated volatile organic compound releases at the site. The scope of work for the investigation also includes further evaluating DNAPL occurrence and collecting soil and groundwater samples for analysis of manufactured gas plant constituents.

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[1] Hahn and Associates, Inc., 2007 "Final Remedial Investigation Workplan, Historical Manufactured Gas Plant Activities - Siltronic Corporation Property, 7200 NW Front Avenue Portland, Oregon," October 19, a work plan prepared for NW Natural.

DEQ considers the results of the CFB Supplemental RI to be directly relevant to the work NW Natural is conducting on the Siltronic property. Consequently, DEQ requests the results of the work to be fully incorporated into the Draft RI Report.

Groundwater and Surface Water Elevation Data. The RI Data Summary Report includes RI data collected between 2007 and 2010. The report concludes that based on groundwater elevations observed in monitoring wells adjacent to Doane Creek and surface water elevations measured at staff gauges that: 1) recharge is occurring to the creek from shallow groundwater in the upper section; and 2) minimal recharge, if any, is occurring from shallow groundwater across the lower sections of the creek. However, the supporting data for these conclusions, including groundwater and surface water elevations, were not provided in the RI Data Summary report (nor on cross-sections C-C' and D-D' of the RI Data Summary Report, as stated in the report text). DEQ also notes that surface water elevation data are also not provided in the May 7, 2013 Environmental Monitoring Report, although two (DC-3) and three (DC-1 and DC-5) surface water elevations are charted in Appendix A, Pages 47 – 52.

DEQ requests that at a minimum, a fourth round of surface water elevation data be collected as discussed in the RI Work Plan and that a comprehensive discussion of groundwater and surface water interactions be included in the Draft RI Report. DEQ also requests that NW Natural prepare a series of cross-sections through Doane Creek to support discussions and evaluations of the pathways and receptors associated with Doane Creek embankment soil, sediment, and surface water. The shallow groundwater to surface water pathway should be included in this evaluation.

In addition to basic geologic information, the cross-sections should include groundwater and surface water elevations, sample locations, embankment soil and sediment sampling depths, monitoring well screen depths, and relevant utility information (e.g., culverts and City of Portland Outfall-22C locations and elevations). For clarification and to avoid misunderstandings, DEQ's request includes preparation of cross-sections for the piped section of Doane Creek between the North Drainage Pond and the outlet of Outfall-22C.

DNAPL Occurrence. DEQ has numerous requests for discussing and presenting interpretations of DNAPL occurrence in the Draft RI Report, including:

- Incorporating DNAPL observations made:
  - During TarGOST® logging;
  - Drilling and installation of groundwater source control extraction wells, control wells, observation wells, piezometers, and performance monitoring wells;
  - Soil field screening and sampling results from drilling the DNAPL borings and installation of monitoring wells NWN-11 and NWN-12 proposed in the DNAPL FSP and Groundwater Monitoring FSP respectively; and
  - By Siltronic in the vicinity of the CFB.
- Discussing the multiple lines of evidence used for delineating potential DNAPL occurrence (e.g., field observations and screening; soil and groundwater characterization results; geophysical surveys; TarGOST® logging).
- Consolidating information regarding evidence of DNAPL occurrence onto a comprehensive set of figures created by combining figures 5, 11, and 12 of the RI Data Summary Report, and revising the cross-sections in Appendix F to graphically present evidence of potential DNAPL occurrence based on the multiple methods used.
- Refining interpretations regarding lateral and vertical extent by presenting evidence for potential DNAPL occurrence at more depth intervals than is provided by Figure 11 and Figure 12 in the RI Data Summary Report (e.g., every 25-feet to 150-feet bgs).

Geophysical Pilot Study. Section 4.4 of the RI Data Summary Report (see pages 53-57) discusses the geophysical pilot study conducted as part of the RI. The geophysical pilot study was conducted to evaluate the potential for two geophysical methods (i.e., ground penetrating radar [GPR] and electrical resistivity imaging [ERI]) to map the contact between the surficial fill and underlying native silt contact and potentially identify low areas where DNAPL accumulation may occur. The low areas interpreted from the geophysical surveys could then serve as targets for additional drilling locations. Based on the pilot study results, NW Natural concluded that the GPR method was not feasible (depth of signal penetration inadequate) and the ERI method was inconclusive for identification of the fill/silt contact in the pilot study area or across the Site where the fill/silt contact is likely deeper.

Regarding ERI, based on information provided in Appendix D (see Page 6), Northwest Geophysical Associates (NGA) concludes that, "...the geoelectric sections from the earth resistivity imaging did show some variations in soil resistivity, which we have interpreted as changes in soil type. However, without borehole or test pit data that interpretation cannot be confirmed."

Additional explanation is needed regarding NGA's comment above. DEQ currently understands, the target depth of exploration was successfully achieved with the ERI, but soil contact resolution could not be confirmed without accompanying borehole data. DEQ anticipated the geophysical equipment and/or surveys would be evaluated in the context of subsurface information obtained from drilling completed in the area of the surveys. For example, monitoring wells NWN-4 and NWN-5 were installed in borings drilled and logged in the portion of the site where the geophysical pilot study was completed. In addition, the DNAPL FSP proposes additional drilling in the area of the surveys near the locations of borings P-19, P-20, and P-22.

DEQ further anticipated that based on the geophysical survey pilot study data, use of geophysical equipment would be expanded over larger areas of the Siltronic site. DEQ understands use of surface geophysical methods was not considered further than the limited surveys completed in the southern corner of the site.

DEQ requests that NW Natural provide additional information to support the decision to not expand use of the GPR and ERI geophysical methods. If NW Natural's conclusion is that the GPR and ERI used at the site were not effective, then use of GPR and ERI in different configurations or other geophysical methods should be discussed. Otherwise DEQ must conclude from the RI Data Summary Report that the evaluation of geophysical methods is incomplete and the goals and objectives of the surveys for purposes of the RI have not been met.

Specific Comments

Section 7.2, Site Soil, Pages 98-101 (see also RI Work Plan Page 13, second paragraph, and RI Work Plan Tables 1 and 2). Three shallow borings (hand auger borings HA-1, HA-2, and HA-3) were proposed near the Fab 2 Outfall to: 1) evaluate contaminant distribution; 2) confirm cyanide results detected in previous borings completed in this area; and 3) evaluate fill material near the outfall. Locations and results for these borings were not included in the RI Data Summary Report, so it is unknown whether these borings have been completed.

Consistent with the RI Work Plan, hand-auger borings HA-1, HA-2, and HA 3 are needed to complete the RI scope of work. DEQ requests that NW Natural provide information regarding the status of these borings.

Section 7.4.2, Surficial Fill WBZ, Page 136, Table 7.4-1, and Table 27. It appears that not all of the twenty-two metals listed in the RI Work Plan were tested for in groundwater samples. For example, data for calcium, sodium, potassium, and thallium are not reported in the RI Data Summary Report and groundwater tables. In addition, titanium is listed in Table 7.4-1 and Table 27, and DEQ wonders if thallium should have been reported instead.

DEQ requests that NW Natural confirm whether these data were collected, and if so, incorporate and evaluate the data in the Draft RI Report. Furthermore, the COI list should be updated based on the results of the work completed at the Siltronic site and fully incorporated into the Draft RI Report for evaluation and completeness.

Appendix D, page 6. DEQ's comment to "Section 4.4, Geophysical Pilot Study, Pages 53-57" applies here.

Appendix G, Figure G4. Figure G-4 updates an interpretation presented by Siltronic in the Supplemental Investigation Report[2] of a deep depression in the upper surface of the basalt off-shore from the facility. The basis for the interpretation is refusal of push-probe drilling equipment in certain off-shore drilling locations.

Consistent with our comments to the Supplemental Investigation Report, DEQ continues to question the interpretation based on the data collected to date. Furthermore we continue to consider other interpretations to be viable (e.g., presence of alluvial gravel in the river). DEQ requests that alternative interpretations be discussed in the Draft RI report. DEQ would refer NW Natural to the Offshore Investigation Report[3] that indicates, "The borings were advanced until sampler refusal occurred, and that depth was assumed to represent the basal alluvial gravel or basalt bedrock" (see Section 1.4.2).

If the configuration of the basalt surface becomes a factor in understanding the nature and extent of contamination beneath the river, or for making informed decisions regarding removal and/or remedial alternatives, additional work may be needed to evaluate the presence and configuration of the trough.

Appendix H, Figures H1 through H15. Isoconcentration maps in this appendix illustrate the distribution of selected MGP constituents in groundwater beneath the Gasco and Siltronic sites. The figures appear to use groundwater data from temporary borings and monitoring wells over numerous monitoring events. In general, the most recent data appear to be presented at each sampling location although there are some inconsistencies between figures.

DEQ has numerous requests for revising the figures for the Draft RI Report, including:

- Using color gradations to depict and highlight concentration trends (e.g. high to low concentrations) on each figure.
- Further organizing groundwater data collected from monitoring wells according to depth intervals within the Alluvium water-bearing zone (WBZ). Currently, isoconcentration figures use -45-feet (City of Portland [CoP] datum) for designating groundwater data in the Alluvium WBZ as being "shallow" or "deep." This depth appears arbitrary, as it does not correspond to

[2] Maul Foster Alongi, Inc., 2005, "Supplemental Investigation Report, Siltronic Corporation, 7200 NW Front Avenue, Portland, Oregon," September 8, a report prepared for Siltronic Corporation.
[3] Anchor QEA, LLC, 2008, "Offshore Investigation Report – NW Natural 'Gasco' Site," February, (received February 14, 2008), a report prepared on behalf of NW Natural.

the site hydrostratigraphy or the occurrence of groundwater contamination. For example, Figure F2-A in Appendix F indicates the contact between the upper Alluvium WBZ and lower Alluvium WBZ occurs at an elevation lower than approximately -65-feet CoP (DEQ notes the depth of the contact is below approximately -65-feet CoP for most if not all of shoreline Segment 1 on the Gasco Site).

- Highlighting only those locations with data being used to prepare an individual figure. For example, installations not relevant to a specific figure could be screened back. Each figure currently shows all locations making it difficult to locate relevant data and/or compare data between figures.
- Presenting the maximum concentrations of the selected COI detected in monitoring wells during the previous four sampling events for the Fill WBZ and each of the to-be-determined depth intervals in the Alluvium WBZ.
- Preparing isoconcentration maps for the Draft RI Report for additional COI, including but not necessarily limited to "available" cyanide, total iron, total thallium, and total petroleum hydrocarbons.

ATTACHMENT 2

DEQ Comments
Remedial Investigation Field Sampling Plans
Historical Manufactured Gas Plant Activities
Siltronic Corporation Property
7200 NW Front Avenue
Portland, Oregon

(Comments submitted November 27, 2013)

DEQ's comments on the following documents are provided in this attachment.

- "Supplemental Remedial Investigation Field Sampling Activities, Doane Creek Embankment Soil and Sediment - Siltronic Corporation Property, 7200 NW Front Avenue, Portland, Oregon" dated March 29, 2012 (Doane Creek FSP);
- "Supplemental Remedial Investigation Field Sampling Activities, DNAPL Characterization - Siltronic Corporation Property, 7200 NW Front Avenue, Portland, Oregon" dated April 12, 2012 (DNAPL FSP); and
- "Supplemental Remedial Investigation Field Sampling Activities, Groundwater Monitoring Well Installation - Siltronic Corporation Property, 7200 NW Front Avenue, Portland, Oregon" dated July 23, 2012 (Groundwater Monitoring FSP).

Each of the documents listed above were prepared by Hahn and Associates, Inc. on behalf of NW Natural.

The Doane Creek FSP, DNAPL FSP, and Groundwater Monitoring FSP present NW Natural's recommendations for addressing data needs for the RI of MGP contamination on the Siltronic property based on the findings of the RI Data Summary Report.

Doane Creek Field Sampling Plan Comments

General Comment

Groundwater and Surface Water Elevation Data. DEQ's General Comment to the RI Data Summary Report applies here (see Attachment 1).

Specific Comments

Section 2.0, Data Collection Needs, paragraph 4. The FSP notes that two additional seasonal surface water sampling events were completed and summarized in Attachment A of the FSP. While surface water chemistry data are included in Attachment A, surface water elevation data are not. Consistent with our general comments on the RI Data Summary Report, DEQ requests that at a minimum, a fourth round of surface water elevation data be collected.

Section 3.0, Sample Collection and Testing, paragraphs 1-4. DEQ does not approve this portion of Section 3.0. The initial composite sampling approach along and within Doane Creek was intended as a screening step to assess the erodible soil pathway for source control purposes, and identify areas for further sampling if warranted based on analysis of the samples. Based on analysis of composite embankment soil and sediment samples, concentrations of PAHs in each sample, SVOCs (bis-2-ethylhexylphthalate) in one sediment sample, and metals (arsenic, lead, manganese) in each soil sample and one sediment sample (manganese only) were equal to or

greater than screening levels. These results indicate archived discrete samples should have been analyzed consistent with the discussion for follow-up testing in the RI Work Plan (see Appendix A, DEQ Comments to July 25, 2007 Draft RIWP, page 2 of 12).

Given the information above, to date only composite embankment soil and sediment samples have been collected and analyzed along and within Doane Creek. Furthermore, the sampling approach proposed in the Doane Creek FSP includes only composite samples. Based on this information and to achieve the data collection objectives of the RI, DEQ requests that embankment soil and sediment sampling be conducted as follows:

- Discrete soil and sediment samples should be collected at previous locations where the detected concentration of an analyte in a composite soil or composite sediment sample is equal to or greater than one-fifth the relevant screening criteria. For this purpose, discrete embankment soil samples should be collected from depths between one and two feet below mineral soil.
- Composite embankment soil samples should also be collected from between approximately 0.5-feet and 3.5-feet below mineral soil to evaluate potential human health and ecological exposure pathways along Doane Creek. As above, follow-up analyses of discrete samples should be conducted if any analyte in a composite soil sample is equal to or greater than one-fifth the relevant screening criteria.

DEQ recommends the scope of the sampling be discussed to clarify the approach and procedures, data needs, and data collection objectives of this work. Subsequent to discussions, DEQ requests that the Doane Creek FSP be revised consistent with this comment.

In addition to our requests above, DEQ requests that groundwater and surface water level measurements be made when the proposed additional embankment soil and sediment sampling work is conducted. DEQ believes these data are necessary to complete the evaluation of contaminant flux from groundwater to surface water and to prepare the cross-sections DEQ requested for the Draft RI Report (see Attachment 1, General Comments, Groundwater and Surface Water Elevation Data).

Section 3.0, Sample Collection and Testing, Paragraphs 5-6. Additional samples are proposed to be collected in the North Drainage Pond (NDP) and will consist of three-part composite embankment soil and sediment samples.

DEQ approves this approach and requests that composite sample testing be followed by analysis of discrete samples in the same manner as requested above for Doane Creek embankment soil and sediment samples (i.e., analyze discrete samples if any analyte is detected in the composite sample at concentrations that are equal to or greater than one-third the risk-based screening level).

As requested above, measurements of nearby shallow groundwater and surface water levels should be made at the same time NDP soil and sediment samples are collected in order to complete the RI data collection objective cited in the comment above.

Section 3.2, Analytical Testing. For the reasons discussed in our comments to Section 3.0, DEQ does not approve the analytical testing program proposed here. This section should be revised to be consistent with the embankment soil and sediment sampling approach NW Natural will develop in response to DEQ's comments to Section 3.0.

Section 3.2, Tables 3-1 through 3-3. DEQ requests the tables nested in this section of the Doane Creek FSP to be revised consistent with the embankment soil and sediment sampling approach to be developed in response to DEQ's comments to Section 3.0.

DEQ notes Table 3-3 of the Doane Creek FSP provides laboratory MRLs and MDLs for the 34-alkylated PAHs and total organic carbon (TOC). In addition, Table 3-3 refers to Table C7 of the RI Work Plan SAP for all other analytes (i.e., not the 34-alkylated PAHs and TOC. However, Table C7 in the SAP appears to be out of date in that it doesn't cover the full list of analytes (e.g., those listed for NDP samples). In addition, screening criteria are not current and at least one set of values appears to have been switched (MRL and MDL for cadmium, water).

DEQ requests that the tables in this section of the FSP be reviewed and updated to include complete lists of analytes for the soil embankment, stream sediment, and NDP samples. DEQ further requests the analytical methods, laboratory MRLs and MDLs, and data screening criteria be reviewed for completeness and updated as appropriate.

Table 11, Summary of analytical results, embankment soil and sediment samples, total metals. Mercury results for composite soil and sediment samples indicate mercury was not detected above detection limits ranging from 0.102 to 0.113 mg/kg, which are greater than the screening level (0.07 mg/kg). The MRL presented in SAP Table C7 for mercury in soil was 0.02 mg/kg, which is lower than the corresponding screening level value. Similarly, cadmium was not detected in soil or sediment samples at a detection limit (1.27 to 1.45 mg/kg) greater than the screening level (1.0 mg/kg), although SAP Table C7 presents an MRL less than the soil screening level (0.02 mg/kg).

Based on this information DEQ considers mercury and cadmium to be present in composite soil embankment and sediment samples at concentrations above screening criteria. DEQ requests that NW Natural explain the discrepancy in the MRLs and MDLs between the RI Work Plan SAP and the actual laboratory analyses. DEQ further requests that steps be taken during the additional proposed sampling work and by the laboratory to achieve the MRLs and MDLs indicated in the SAP. For clarification, if laboratory MRLs and/or MDLs have been revised downward since the RI Work Plan was prepared, DEQ requests the lower values be met.

Groundwater Field Sampling Plan Comments

Section 2.0, Page 3, Recommendation. The Groundwater Monitoring FSP proposes drilling and installing four additional monitoring wells; two each in the Fill WBZ and the Alluvium WBZ. DEQ approves the locations of the four monitoring wells proposed in the FSP.

Section 3.0, Page 3, Monitoring Well Design and Installation Methods. DEQ's comments on this section of the Groundwater Monitoring FSP are related to the depths of the monitoring wells proposed in the Fill WBZ and the Alluvium WBZ. The depths of proposed Fill WBZ borings NWN-11-XX and NWN-12-XX range between 22-feet and 25-feet bgs. Based on the depth of the base of the Fill WBZ encountered at borings P-39 and P-40 (21.5 to 23 feet bgs), the target proposed depth for NWN-12-XX is appropriate.

The proposed/target depth for Fill WBZ monitoring well NWN-11-XX (22-25 feet bgs) appears to be based on the depth of the Fill/Silt contact observed in sonic boring SB-35. However, the contact was encountered much shallower at SB-35 (22 feet bgs) than other borings located in the vicinity of the proposed NWN-11-XX location. Borings P-36, P-37, and P-54 encountered the

contact at approximately 30-feet bgs. Based on this information, DEQ requests NW Natural to acknowledge that Boring NWN-11-XX could be advanced to a projected depth of 30-feet bgs.

NW Natural proposes drilling and installing two monitoring wells in the Alluvium WBZ (i.e., MW-13-70 and MW-13-100). DEQ considers the depths of monitoring wells MW-13-70 and MW-13-100 to be appropriate. DEQ notes that monitoring wells MW-13-70/100 were proposed based on the results of the drilling and sampling completed at Boring SB-21. For clarification, except for total cyanide DEQ does not consider the analytical results for the sample collected from between 10-feet and 13-feet bgs to be representative of potential contamination in the Fill WBZ at the SB-21 location. The boring log for SB-21 indicates that a greater thickness of MGP material (e.g., wood chips exhibiting "Prussian blue," tar, and viscous oil) was observed below the sample. DEQ recommends that NW Natural add a Fill WBZ monitoring well to the scope of work for the Groundwater Monitoring FSP to further characterize contamination at this location. In the absence of a monitoring well, with the exception of total cyanide DEQ requests that NW Natural not use data collected from the Fill WBZ at Boring SB-21 in the preparation of iso-concentration maps.

DEQ notes that the final depths of monitoring wells are dependent on observations made in the field during drilling, including but not limited to the depth of the contact between the fill and upper silt unit, and the depth of the alluvium and weathered basalt contact.

DNAPL Field Sampling Plan Comments

General Comment

Central Facilities Building DNAPL Occurrence. DEQ's general comment regarding incorporation of the Central Facilities Building (CFB) Supplemental RI results into the Draft RI Report applies here (see Attachment 1).

Geophysical Pilot Study. DEQ's general comment to Section 4.4 of the RI Data Summary Report applies here (see Attachment 1).

Specific Comments

FSP Section 2.0, second and third paragraphs (Item 1) and FSP Figure 2. Additional borings (P-19, P-20, and P-22) are proposed to collect undisturbed core at locations in the southern portion of the site. DEQ approves this work.

However, DEQ notes that not all areas on Figure 5 of the RI Work Plan that are shown to contain residual or potentially mobile DNAPL have been explored, in particular areas in the southern portion of the Site (e.g., between borings P-22 and P-25, and P-G and P-19). In addition, the areas west of boring P-17 where mobile DNAPL was mapped (e.g. borings P-Y, P-B, and P-Z) and south and west of boring P-15 are not well defined.

Additional borings may be useful in these areas to complete delineation. In the absence of any additional step-out borings or further use of geophysical methods, DEQ will consider the area encompassing boring locations P-24, P-E, P-25, and P-26, and potentially P-28 and P-31 to the east/northeast; boring locations P-24 and P-17 to the west/northwest (and beyond); and boring location P-15 to the south as containing DNAPL.

FSP Section 2.0, fourth and fifth paragraphs (item 2) and FSP Figure 2. Additional borings are planned (P-34 and P-55) to collect undisturbed core at locations in the parking lot south of the Fab 1 building and in the former central tar-containing excavation area. DEQ agrees with placement of borings P-34 and P-55; however, these borings may be insufficient to complete delineation. In the absence of additional step-out borings or further use of geophysical methods south/southwest of P-34, DEQ will consider the area containing DNAPL to potentially extend to P-24 to the southwest, boring locations P-Z to the west, and P-29 to the west/northwest.